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The Effect of Tooth Brushing with Whitening and Non-Whitening Tooth Paste on Surface Roughness of Coated and Uncoated Glass Ionomer Cement

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Abstract : Background: Restoration materials could undergo changes in their clinical properties such as changes in roughness of the restoration's surface. An increase of surface roughness accelerates bacterial colonization and plaque maturation. It can be prevented by mechanically clean the tooth surface by brushing the teeth using toothpaste. Toothpaste may contain abrasives materials that usually found in whitening toothpaste. Those abrasive materials could increase the roughness of the restoration`s surface. Glass ionomer cement (GIC) is one of the restorative material widely used to this day. GC America has made an innovation called EQUIA to improve their wear resistance by coating the surface of GIC using G-Coat Plus. Objective: To determine the effect of teeth was brushing with whitening and non-whitening toothpaste to the surface roughness of coated and uncoated restoration (GIC). Methods: This research was a laboratory experimental with pretest-posttest group design. There were 28 samples which were divided into 2 groups. The first group was brushed with whitening toothpaste and the second group was brushed with non-whitening toothpaste. Each group was divided into group which coated by G-Coat Plus and group which left uncoated. The value of surface roughness was measured by using Roughness Tester. The data was analyzed by using independent t-test to determine differences between the surface roughness of coated samples and uncoated samples brushed with whitening and non-whitening toothpaste. Result: It was found that average roughness differences before and after being brushed by whitening toothpaste were smaller in coated samples than in uncoated samples ($0.07 \pm 0.09 < 0.12 \pm 0.02$). Similar results were also found in samples brushed by non-whitening toothpaste (0.02 ± 0.01 0.03 ± 0.01). The differences of average roughness in samples brushed with non-whitening toothpaste were smaller than samples brushed with whitening toothpaste. Conclusion: The data showed there were statistically significant differences between the surface roughness of coated samples and uncoated samples brushed with non-whitening toothpaste ($p < 0.05$) but the was no statistically significant to samples brushed with whitening toothpaste ($p > 0.05$).

Keywords : surface roughness, toothpaste, EQUIA, coating
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